STATEMENT OF WORK

FOR

Organizational Ethnographer for CAS Directed Design Team

1. Purpose, Objective, and Background of Work to be Performed:

Purpose: The purpose of this effort is to conduct organizational ethnographic research on a short-term NASA team to identify and document key factors of a new teaming approach so that management may make informed decisions regarding this approach in the future and the team can obtain rigorous feedback for future improvements. This effort includes skills also called: business, corporate, or organizational anthropology.

Background:

The Project: The Convergent Aeronautics Solutions (CAS) Project, which is part of the Transformative Aeronautics Concepts (TAC) Program in NASA's Aeronautics Research Mission Directorate (ARMD). CAS is conducting a focused, short-term effort with a small team from four NASA centers to complete the conceptual design of a new testing capability using a new teaming approach. There are two key aspects of this experimental effort, one technical and one teaming.

The technical objective is to use innovative designing thinking or human-centered design approaches to complete the design of the new testing capability. To address this objective, training of the multi-center, multi-functional, and multidisciplinary NASA team will be provided to guide the team on using innovative design and creative problem solving methodologies and ensuring that the NASA team correctly and skillfully applies these methodologies to complete the conceptual design of the new testing capability.

The teaming objective (which is central to this SOW) is to use a rapid-development "skunk-works style" or "design shop style" teaming environment using the best available people *at the time* (without disrupting existing efforts).

a. The NASA "Big Question": What is the feasibility of using a new teaming approach similar to a skunk works design team of the best currently available (BCA)?
b. Team must be multi-disciplinary, multi-functional, and multi-center (from all four NASA center that conduct aeronautics research centers: NASA Ames, NASA Armstrong, NASA Glenn, and NASA Langley)
c. Complete the technical study rapidly – finishing the technical challenge by mid March 2016

The NASA team to be observed: The NASA team will consist of a newly assembled group of 8-10 engineers, scientists, and technicians from four, geographically dispersed

NASA centers, representing a variety of different technical backgrounds. The NASA Centers involved include NASA Glenn, Langley, Ames, and Armstrong. The team members will be dedicating approximately 75-100% of their time on this effort from roughly September 2015 to April 2016, with the technical deliverable to be completed by mid March 2016. The team is led by a NASA PI who will be the primary interface with the contracted organizational ethnographer and a NASA PM who will coordinate project details. Other key team personnel include another vendor who will be providing team facilitation and the support of a NASA Project Coordinator who will provide administrative, business, and IT support for the team.

2. <u>Description of the Work to be Performed</u>: The vendor shall perform the following task requirements where the effort shall focus on observing and describing the team's dynamics.

2.1 To the extent possible, travel to most, if not all, face-to-face meetings and attend all other meetings in person, via phone or video conference, doing so with minimal intrusion and manipulation to the team's ongoing work and work style. The team is expected to have 5-8 face to face meetings.
2.2 Maintain personal contact with team members via e-mail and telephone conversations between formal meetings as is needed to accomplish the research task.
2.3 To the extent possible, obtain records of project-related e-mail correspondence between team members and audio recording of team-related phone calls.
2.4 Obtain copies of meeting notes and/or meeting minutes from team members.
2.5 As possible, spend time at each center (NASA Ames, Armstrong, Glenn, and Langley) to directly observe unobtrusively the different cultures by location.
2.6 Conduct semi-structured interviews in person on site at the four different centers to the extent possible; utilization of Skype or video conferencing may also be used if on site visits can not be efficiently scheduled.
2.7 Specific aspects to observe:
    a. How does leadership emerge within this team? How does "formal" leadership (if it exists) recognize and interact with emergent patterns of leadership?
    b. What roles develop in this team and who occupies them?
    c. How is work distributed or shared or organized?
    d. How does team member personality and socialization types influence their role within the team and overall team performance?
    e. How does information or data influence work flow among team members? How is information shared among team members? Who communicates problems, issues, etc. and to whom?
    f. How do individual team members feel about openly sharing their perspectives about the project's condition? What is the team climate for knowledge-sharing and communication?
    g. How is the communication of problems, errors, or risks rewarded or punished and by whom? How do the team members receive this?

h. What types of challenges or errors develop between team members (such as misunderstandings, miscommunication, etc.) and how do these develop?
i. Which members understand each other better than others and why? Which team members act as translators or facilitators between disciplines and how do they do this?
j. How does team functioning change over time? Do teams think, feel, and work differently as the project develops?
k. How do factors outside of the team (environmental, organizational, individual, etc.) impact team functioning and processes?
l. How do team cognitive processes influence team functioning? How do teams develop shared mental models?
m. What is the process by which the team approaches, evaluates, and solves problems?
n. How do team members identify themselves (such as by their specific discipline or home organization, etc.) and how does this identity shape individual and team performance? How does this change over the life of the project?
o. What are key tacit practices behind established processes?

2.8 Identify and describe relevant theories that connect to or explain observed behaviors.

2.9 Provide an assessment of the key challenges, implications, and opportunities in NASA's approach to the type of teaming observed. Vendor shall identify areas of difficulty in NASA application and areas of most promise for NASA application citing relevant theories where possible. Vendor shall provide a written document with this information as well as a presentation to NASA leadership.

2.10 A final ethnographic study report shall include:

a. A list of figures, tables, abbreviations, and an executive summary or abstract that succinctly summarizes the study findings
b. Description of the objectives, background, procedures, and research methodologies employed in the ethnographic study including methods of data collection and data analysis.
c. Identification and description of significant people, places or locations, and contacts within and outside of the group
d. Findings from the ethnographic study that communicate an understanding of the a priori research questions and explain unanticipated patterns that emerged.
e. Comprehensive summary of the processes that are working effectively and the processes that are ineffective and why.
f. A summary of the project's limitations, implications, opportunities, and surprises including items noted in 3.7, 3.8, and 3.9.
g. An appendix that includes a glossary of terms, transcript codes, a socio-demographic profile of interviewed respondents, relevant case studies, and a bibliography of all ethnographic materials listed above

2.11 Final report and presentation of the ethnographic study shall focus on key findings and includes explanatory graphics presenting information that illuminates patterns and is easily accessible and actionable to NASA leaders. Final presentation shall be given at a meeting at NASA Langley or NASA HQ.

2.12 The vendor shall coordinate all activities with the NASA PI and NASA PM.

2.13 Vendor shall complete all necessary requirements for obtaining approval from NASA Langley Research Center's Institutional Review Board (IRB).

3. Deliverables/Milestones:

- Project timeline with proposed actions and deliverable dates shall be provided to end user within 2 weeks of purchase order issuance.
- Submittal of complete proposal for this study to the NASA Langley Research Center IRB within 3 weeks of purchase order issuance.
- Literature review for the study area and a list of potential interview questions designed to address the aforementioned research queries, including a structured or semi-structured interview guide that is approved by the end user, within 6 weeks of order issuance.
- Copies of all ethnographic materials, including:
    - All audio and/or video recordings and their transcripts from meetings, focus groups, and participant interviews
    - Field notes and self-generated texts from participant observation
    - Copies of secondary literature and/or artifact data [e.g., press releases, government reports, newspaper or magazine articles, etc.] referenced
    - Quantitative or qualitative responses to questionnaires or surveys

- The Vendor shall submit monthly progress reports within 10 working days after the end of each calendar monthly report period by email to the end user. Monthly report shall include:
    - Description work accomplished during the reporting period
    - Current and potential problem areas and proposed corrective action
    - Work to be performed during the next reporting period
- Formal Final Report and presentation as discussed in 2.8 shall be provided by the end of the period of performance via email to the end user. The Vendor shall submit a final report in accordance with NASA FAR Supplement clause 1852.235-73 Final Scientific and Technical Reports.

5. Government Furnished Items:

None required –any explicit government-furnished information will be provided. All data will be obtained through involvement with team. The Government shall arrange meeting rooms for the Team during the period of performance.

6. Other information needed for performance of task:

Vendor travel shall be necessary to interface with the NASA Design Team to enhance the research deliverables. Trips include 4-5 Face-to-Face (F2F) design meetings with the NASA Design team of 3-5 days, other shorter trips as needed to interface with the NASA team throughout the design effort at all four centers, a trip to the CAS Teams Investment Gateway (CASTInG) in March 2016 at NASA HQ where the team presents its technical deliverable of a conceptual design. Team observation will be complete at the CASTInG with final analysis of the data delivered via written report and oral presentation at NASA Langley or HQ by August 1, 2016.

7. Period of Performance:

The period of performance shall be from October 01, 2015 to September 30, 2016.